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ASSESSMENT OF FARM REAL ESTATE IN THE UNITED STATES

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The attainment of an equitable assessment of farm realty is not a simple task. For decades, tax administrators, as well as students of taxation and public administration, have grappled with the problems involved in estimating the market value of properties which, on the average, change hands only about once in a generation. 1/ In the 19th century, a typical American assessor, who was usually elected to office for a 1- or 2-year term by the constituents of his township or county, was frequently (if not typically) forced by lack of time, training, and systematic assessing techniques more or less to accept the previous assessments found on the property rolls. Ordinarily, minor difficulties with individual property owners could be adjusted; usually, an effort was made to increase assessments as realty improvements were added; and occasionally, blanket increases or decreases were made to reflect sharp changes in land values in the area. Usually, however, the assessor's concept of value was basically static or in terms of long-range or "normal" conditions. The capabilities of farm assessors have undoubtedly increased during the present century. At the same time, the complexities of assessment have increased greatly.

The theoretical goal of the assessor, according to most State constitutions, is to determine the price at which a property would change hands between a willing buyer and a willing seller, with neither under any unusual compulsion to buy or sell. This rather nebulous concept has been identified by various courts and administrators as "true," "market," "fair," "full," "actual," or "cash" value. But rarely if ever have the statutes indicated a precise procedure to aid the assessor in his determination of so-called market value.

In practice, the process of valuation has been as simple as glancing out an automobile window and jotting down a figure (or as copying the previous assessment, or accepting the owner's estimate of value). At the other extreme, an unusually careful assessor can go through a long and tedious process of assembling a large body of information having some relationship to the value of the property, analyze this material by some consistent method, and then by a

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1/ Since 1912, annual voluntary transfers of farm real estate have averaged only about 3 percent of all farms in the United States. See Major Statistical Series of the U. S. Department of Agriculture, U. S. Dept. Agr. Handb. 118, Ch. 1, Land Values and Farm Finance, 1957; and U. S. Agr. Res. Serv. ARS 43-101, 35 pp., illus. 1959. Current Developments in the Farm Real Estate Market.

judicious weighing of the reliability and pertinence of the assembled data arrive at an expert opinion. The latest sales price of the property being appraised, recent sales prices of reasonably similar properties, the original cost of reproducible properties, and the net or gross income derived from the property are studied. The latter procedure involves more or less realistic assumptions required to allocate farm income to land and improvements, labor, management, and usually such nonassessed inputs as fertilizer and lime. Also, the income approach involves the determination of appropriate capitalization rates.

Thorough analysis might consider also access to market centers, the existence or expectation of national and regional prosperity, general inflation or price declines, shifts in the demand for farm products, and recent and expected population shifts - particularly the likelihood that the property will be transferred to residential, business, industrial, or highway use. The enactment or expected enactment of legislation, especially laws relating to the support of farm prices, agricultural credit, soil conservation, taxation of capital gains, or the soil bank can influence market prices for farm real estate. Many of these factors affect the general market value of farmland, but they do not always cause significant changes in the relative values of individual farms within local assessing jurisdictions.

No one of these factors alone is a certain indicator of the market value of a particular tract. This is true even of the sales price of a property transferred a short time before the assessment; in many instances, it is not unlikely that immediate resale to a third party would occur at a price differing considerably from that of the original sale. The latter occurrence illustrates the relatively heterogeneous character of farmland in the eyes of potential purchasers.

Even a property that cannot be distinguished from the surrounding land so far as economic capability is concerned is unique in its exact physical location. When, for example, a tract offered for sale is the only one currently available within an area in which the demand for such properties is heavy, the various potential buyers typically offer prices that differ considerably. Depending on the present scale of their farm businesses, their methods of operation, and their location in relation to the tract offered for sale, acquisition of the tract would represent varying increments of potential income to possible buyers. But if, at about the same time, property almost identical in soil type and size to the first but in a different area comes on the market, and for various reasons demand for the property by potential buyers is weak, the second property will probably sell for a considerably lower price than the first.

This not uncommon situation points up the imperfect character of the land market and the aura of uncertainty involved in the concept of the market value of particular farms. Thus the idea that every economic property has a true or market value at a particular time is unrealistic. More useful for most farm properties, and particularly for those that are or that may become the object of a strong demand for some higher value nonfarm use, is the conception of a value range of uncertainty, which broadens as the complexity of the particular supply and demand situation increases. Alternatively, a "most probable market value" seems to be more meaningful than "the true or market value."

Nevertheless, for tax-assessing purposes, as for most other practical purposes of valuation, a definite value must be assigned. Realization of the magnitude and difficulty of the valuation process is basic to an understanding of the problems of property tax assessors.

MEASURING THE QUALITY OF FARM ASSESSMENT

Many of the factors noted, such as the low turnover rate of farms, the imperfections of the farm realty market and, particularly in the last decade, the impact of rapid urbanization in many rural areas, the construction of highways, and government programs affecting farm income and values also make it difficult to measure the quality of the assessing performance. First, in evaluating the quality of assessment, the extent to which all taxable property is listed on the tax rolls must be determined. For personal property, and especially for intangibles, the major assessing problem is to discover the taxable items. In contrast, the primary difficulty in assessing realty lies not in locating the property (even though, occasionally, missing tracts are discovered) but in valuation. Thus the job of measuring the quality of assessment of farm real estate properties amounts chiefly to obtaining accurate estimates of their market values. Presumably in most instances, these estimates would be more accurate than those made by the tax assessor.

If cost were no consideration, the ideal approach to evaluation of assessment results would be to reappraise all farms within the area under consideration. Drawing an adequate probability sample from the population of all farms and appraising the sample farms would serve the purpose almost as well. In view of the high cost of reappraisal, however, most studies have been restricted to comparing the selling prices of a sample of transferred farms with the most recent assessment before the sale. 2/ Even though transferred farm properties are not strictly representative of the population of all taxable farms - smaller and lower value farms usually turn over more rapidly than larger and higher value properties - careful statistical analysis of assessment-to-sales ratios can yield results that will be helpful in evaluating the quality of assessment.

Usually, sales between parties of the same name, judicial sales, sales with life estates retained, and the like are not considered arm's-length transfers. Authors of most assessment-ratio studies have obtained the sales price either directly from the conveyance or have calculated it from the amount of Federal revenue stamps on the deed. 3/

2/ Many assessment-to-sale ratio studies have included all bona fide farm transfers rather than a sample thereof.

3/ National Committee of Railroad and Public Utility Tax Representatives, Report of the Ratio Study Committee, August 1956, St. Louis, Mo., 1956. This publication summarizes the results of assessment to sales price ratio studies in 20 States and a study of assessed value to appraised values in California. However, farm real estate properties were subjected to separate analysis in only 9 of the States. An earlier study by Joseph Silverherz, The Assessment of Real Property in the United States, New York State Tax Commission, 1935, collected assessment ratio data on farm transfers in 28 States.

Numerous studies of the assessment of farm realty dating from the 19th century have had remarkably similar findings. In general, these studies found very wide ranges and correspondingly large measures of relative variation both between and within assessing units. A "zone of tolerance" plus or minus 10 percent of average assessments is frequently referred to as the limits of good assessing within a local jurisdiction. This is a somewhat arbitrary criterion of assessment quality; perhaps greater or lesser limits should be allowed, depending upon the degree of homogeneity of properties within the assessing unit. Nevertheless, when the average deviation of assessment ratios amounts to more than 30 or 40 percent of the average assessment ratio for an assessing jurisdiction, it seems safe to conclude that the assessing process could be improved considerably. A 1953 study of assessment-sale ratios for farm realty in 14 Georgia counties indicated coefficients of variation (average deviation of individual assessment ratios divided by average assessment ratio of the jurisdiction) of greater than 50 percent in 8 counties and above 110 percent in 1 county. 4/

One of the most consistent findings of assessment-to-sales ratio studies has been that properties within particular assessing districts with relatively low market values per acre have been assessed at considerably higher percentages of their market values (selling prices) than have properties with higher per acre values. To a less striking degree and with more exceptions, farms with a relatively high total value are found to be assessed at lower proportions of their selling prices than have farm properties with relatively low total values. An early example of an assessment-to-sales study of rural real estate for the years 1924-27 in southeastern Minnesota indicated the following: 5/

Sales (value per acre)	Assessment (average ratio)
	Percent
Up to $50	110.9
$50 to $75	124.6
$75 to $100	103.7
$100 to $125	90.5
$125 to $150	83.6
$150 to $200	73.5
Over $200	67.1

4/ Taylor, C. C., Farm Real Estate Assessments in Georgia, Ga. Agr. Expt. Sta. Bul. N. S. 22, 1956, pp. 9-10.

5/ Clarke, G. B., The Assessment System of Minnesota in Relation to Equality of Taxation, Jour. Farm Econ. 12: 573-587, 1930.

A quarter of a century later, another study examining the relationship between selling prices and assessment ratios of rural properties within four selected Kansas counties (table 1) indicated a somewhat more complex but fairly similar relationship. 6/

Table 1.- Average selling prices of locally assessed rural property, by assessment ratio class, selected counties, Kansas

Assessment ratio class (percent)	County			
	Barber	Linn	Franklin	McPherson
	1,000 dollars	1,000 dollars	1,000 dollars	1,000 dollars
1 to 9	---	5.0	11.8	7.2
10 to 19	60.0	21.3	5.5	8.5
20 to 29	18.8	11.5	8.4	15.6
30 to 39	12.2	8.2	9.1	9.3
40 to 49	---	7.5	6.4	7.4
50 to 59	12.8	4.6	4.0	4.2
60 to 69	8.5	4.5	5.5	5.2
70 to 79	---	3.5	6.7	---
80 to 89	8.8	5.0	2.4	---
90 to 99	---	3.5	1.8	---
100 to 109	---	---	1.8	---
110 and over	---	1.8	---	---

It is evident from the Kansas study and other recent studies that assessment is not, however, consistently regressive in respect to total selling prices. In some areas, properties with intermediate selling prices have been assessed at the lowest proportion of their selling prices. Nevertheless, properties assessed at the highest assessment ratios are usually those of less than average selling price.

A study in Ohio indicated that with few exceptions, farms rating high in several economic factors - farm productivity, character of real estate improvements, quality of roads, and nearness to market - were assessed at lower ratios of market value than were farms with lower ratings in these factors. 7/ A more recent analysis in Kansas of farms classified according to value per acre, soil type, slope of land, distance from town, and type of road had about the same findings as the Ohio study. It was found also that farms with real

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6/ Leonard, L. A., Assessment Inequalities of Locally Assessed Real Estate in Kansas, 1933-53. Kansas State Commission of Revenue and Taxation. November 1954, p. 20.

7/ Moore, H. R. , Taxation as Related to the Property and Income of Ohio Farms. Ohio Agr. Expt. Sta. Bul. 459, 1930, p. 36.

estate improvements were assessed at slightly higher ratios than unimproved farms. 8/

THE CENSUS ASSESSMENT RATIO STUDY OF REAL ESTATE TRANSFERS

The Bureau of the Census has recently published the results of an extensive assessment-to-sales ratio analysis of locally assessed real estate transferred during a 6-month period in 1956. 9/

The census study was based on a sample of 1,511 local assessing jurisdictions. At the request of the Agricultural Research Service, the census sampled 159 additional rural jurisdictions to obtain more complete coverage of farm properties. The results of both samplings are summarized in tables 2 and 3. The census category, "vacant acreage and farm properties" (tables 2 and 3), was defined as "properties described on local tax rolls in terms of acreage, rather than lots." About 60 percent of the total market value (sales price) is estimated to be in farms and the remaining 40 percent in vacant acreage. The latter includes unimproved timber, mineral and waste lands, as well as some land used for agriculture. The total of "acreage and farmland" thus only roughly approximated the concept "farmland," as then defined by the U. S. Department of Agriculture. Nevertheless, the census findings are useful indicators of the general level and quality of local farm assessments.

In broad outline, the census study confirms the conclusions of previous assessment ratio studies; it also yields additional details of considerable potential interest to tax students and State and local governmental bodies. An examination of the findings on value mean assessment ratios, simple average assessment ratios, and the indexes of assessment regressivity (table 2) substantiates the price-regressive assessment relationship found in most studies of the last half-century. 10/ The total assessed value of all transferred

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8/ Marsh, C. F., and Pine, W. H., The Value of Farm Real Estate. Kans. State Col. Bul. 389, 1957, pp. 10-24.

9/ U. S. Bureau of the Census, U. S. Census of Governments, 1957, v. 5, Taxable Property Values in the United States, 145 pp., 1959. This excellent study includes a detailed analysis of sales of nonfarm single family residences. A preliminary report on the study issued in 1958 was titled "Assessed Values and Sales Prices of Transferred Real Property."

10/ For all except three States and the District of Columbia, the period of sales covered was July through December 1956, in relation to assessments made sometime in the first half of 1956. Because of differences in assessing dates, the sales survey period in Alabama, Connecticut, and Nevada was January through June 1956, compared with assessed values made as of a date late in the calendar year 1955 and becoming final by the beginning of 1956. "Where, as in Texas, the same piece of property may be differently valued for local taxation by various kinds of local governments, valuations as set for county taxes have been used here. On a State-prescribed basis throughout four States (Illinois, Minnesota, Montana, and North Dakota) and to some degree elsewhere, the gross assessed value for each property on the tax rolls, as finally used for taxation purposes, represents a fraction or a multiple of another valuation amount initially recorded. The statistics in this report relate to the final value in these

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acreage and farm property in the United States during the 6 months of 1956 covered by the census study is estimated at $222 million. The value mean assessment ratio for acreage and farm properties for the United States was $222 million, the total assessed value, divided by $1,205 million, the aggregate selling price, or 18.4 percent. The corresponding simple average assessment ratio was 31.9 percent, and the United States average index of assessment regressivity within local assessment jurisdictions was 148 percent. For "farms" alone, the United States value mean assessment ratio was 19.6 percent, the simple average assessment ratio was 28.0 percent, and the average index of assessment regressivity within local assessing units was 122 percent. It is evident that, in 1956, high value properties still tended to be underassessed by the typical local assessor in relation to properties of lower market value. But the indexes of assessment regressivity of vacant acreages and farms taken together are considerably greater than the index for farms alone. In view of rapid shifts to higher economic uses and the more diverse characteristics of vacant acreage properties, it is not surprising that assessment of these properties has proved to be particularly difficult.

A measure of the considerable variation of average assessment levels among local assessing units within each State is provided by the "coefficient of inter-jurisdictional assessment ratio variation" (col 5, table 2). 11/

Differences in average assessment ratios of transferred acreage and farm properties are summarized by metropolitan and nonmetropolitan areas in table 3. The average level of assessment - measured by the value mean average assessment ratio - is higher in nonmetropolitan (20.0 percent) than in metropolitan areas (16.2 percent). This difference may be partly explained by the higher rate of transfer of properties from agricultural to residential, business, and industrial use in metropolitan areas; for the great majority of such transfers, market values are thereby considerably enhanced. As the selling prices are

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10/ Continued-
instances, rather than to the preliminary amounts." U. S. Bureau of the Census, 1957 Census of Governments, v. 5, Taxable Property Values in the United States, p. 2, 1959. Census questionnaires sent to buyers or sellers of properties included in the sample established the selling price of the transfer and its classification: A. One-family house; B. multifamily residence; C. commercial property (store, office building, hotel, and so on); D. industrial property; E. farm; F. vacant lot (either city or suburban); G. vacant acreage; and H. other. The questionnaire also asked for various information designed to indicate whether or not the transfer was bona fide.

11/ The coefficient of variation, a measure of relative dispersion, equals the standard deviation from a mean divided by the mean. A range plus and minus one standard deviation, a measure of absolute dispersion, will include about 2 out of 3 items of a normal distribution. Thus a coefficient of 40 percent, which is the average of the 48 States for acreage and farm property, indicates that about one-third of the local jurisdiction had average assessment ratios 40 percent greater or less than the State average. The rather wide variation between local assessing units within most States indicates that considerable improvements in State equalization might be made.

Table 2.- Assessment ratios of vacant acreage and farms, and farm real estate tax levies as percentages of farm value and income, States, regions, and United States, 1956

State and region	Vacant acreage and farms				Farms				Farm real estate tax levies	
	Assessment ratio 1/		Index of assessment regressivity within local assessing units 2/	Coefficient of inter-jurisdictional assessment ratio variation	Assessment ratio		Index of assessment regressivity within local assessing units 2/	Value mean assessment ratio of total locally assessed taxable real property	Per $100 of market value	As a percentage of net farm income
	Value mean	Simple average			Value mean	Simple average				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Percent	Percent		Percent	Percent	Percent		Percent	Percent	Percent
Maine	31.7	47.6	131	49	38.8	53.3	109	35.1	2.23	7.2
New Hampshire	34.8	46.2	130	37	37.1	42.3	109	40.4	1.94	11.7
Vermont	29.5	91.3	189	51	26.7	37.1	119	29.2	1.74	14.9
Massachusetts	25.4	36.2	128	42	27.5	30.9	104	42.8	1.86	15.3
Rhode Island	49.1	62.1	109	45	66.4	69.7	100	64.2	.92	7.1
Connecticut	33.0	38.4	115	39	38.6	35.3	103	43.9	1.48	10.8
New York	32.4	74.3	216	47	28.2	38.9	117	52.8	1.81	11.5
New Jersey	12.3	19.8	153	52	11.9	18.4	118	26.0	1.35	8.8
Pennsylvania	18.8	33.6	155	43	18.1	26.7	125	32.3	1.09	8.7
Delaware	23.8	42.1	143	26	39.0	44.3	118	48.6	.46	2.0
Maryland	32.0	40.0	135	39	37.0	41.5	109	50.7	.75	6.6
Northeast	26.0	49.3	163	43	25.0	34.4	117	42.4	1.39	9.6
Michigan	19.4	51.8	155	100	15.2	45.2	126	29.7	.85	6.7
Wisconsin	43.5	49.8	115	51	44.3	48.7	106	45.6	1.74	8.8
Minnesota	15.3	31.1	136	65	15.2	25.6	119	11.7	1.34	8.3
Lake States	23.7	45.4	142	72	22.6	40.3	119	29.0	1.31	8.1
Ohio	24.7	32.9	119	32	27.1	33.6	113	36.0	.77	7.5
Indiana	19.1	22.4	110	43	20.8	24.7	116	21.9	.83	7.8
Illinois	42.3	57.9	120	32	41.7	51.0	116	41.8	1.22	9.2
Iowa	27.5	31.6	113	69	27.1	33.7	112	23.2	1.10	9.2
Missouri	26.3	36.7	133	30	26.7	33.0	120	27.5	.81	4.8
Corn Belt	27.3	35.7	119	41	28.7	35.1	115	30.1	1.00	8.1
North Dakota	17.1	25.3	165	40	16.6	22.1	132	14.8	1.10	5.9
South Dakota	45.1	56.4	129	37	43.2	52.3	109	40.2	1.40	11.5
Nebraska	29.2	34.8	156	35	29.6	36.3	130	28.9	1.34	14.3
Kansas	26.1	37.5	123	44	26.0	35.2	113	21.0	1.10	18.6
Northern Plains	27.6	37.3	139	39	26.9	34.4	120	26.2	1.22	12.3
Virginia	14.2	22.7	154	62	12.8	18.7	129	27.4	.56	3.8
West Virginia	26.7	49.6	177	42	29.8	45.3	139	29.5	.35	3.0
North Carolina	25.6	49.3	131	47	25.7	39.2	121	35.1	.44	1.7
Kentucky	28.7	31.5	121	34	29.5	30.1	113	29.3	.71	3.6
Tennessee	21.9	27.8	163	46	20.5	24.4	129	28.4	.52	3.3
Appalachian	20.6	33.0	149	46	20.6	29.2	125	29.9	.53	2.8
South Carolina	8.2	12.2	138	42	8.7	10.5	125	6.5	.44	2.4
Georgia	14.5	23.8	127	39	14.0	18.2	113	22.3	.47	2.5
Florida	11.1	22.1	161	67	14.6	22.7	133	29.8	.46	3.2
Alabama	16.6	31.6	161	77	15.0	29.4	137	19.1	.43	2.6
Southeast	12.0	23.3	155	56	14.1	21.3	129	19.4	.45	2.7
Mississippi	15.0	24.3	147	37	14.4	21.6	135	17.1	.49	2.9
Arkansas	7.6	16.4	201	37	6.8	11.3	145	10.0	.48	2.6
Louisiana	8.9	20.8	235	41	9.4	19.0	165	19.6	.37	2.7
Delta States	10.0	19.3	196	38	9.5	14.9	147	15.6	.45	2.8

Oklahoma	15.6	27.2	149	36	16.6	26.6	129	19.7	.57	9.8
Texas	10.3	18.4	160	51	9.7	13.5	126	16.4	.47	7.3
Southern Plains	11.9	22.3	157	44	11.7	18.9	127	18.0	.49	7.7
Montana	7.5	13.4	161	86	6.9	10.5	122	8.5	.91	7.7
Idaho	9.4	16.3	156	32	9.2	14.5	149	11.2	1.01	8.5
Wyoming	19.5	28.5	123	56	19.8	22.5	104	19.3	.96	10.4
Colorado	18.9	21.3	102	34	19.5	25.4	108	26.4	1.20	15.9
New Mexico	12.0	26.0	178	50	11.3	25.6	167	18.3	.33	5.9
Arizona	7.5	10.9	168	51	8.5	9.5	151	15.8	.62	3.8
Utah	11.4	28.3	167	44	12.4	18.4	111	14.7	1.09	9.9
Nevada	17.7	29.3	125	36	17.9	20.7	97	23.2	.55	7.7
Mountain	11.9	19.6	148	49	12.0	18.2	134	17.2	.88	8.4
Washington	13.0	16.7	128	49	13.2	15.1	109	15.7	.63	5.9
Oregon	15.4	23.6	171	34	16.3	18.0	107	18.9	1.09	10.1
California	12.7	18.6	150	38	14.3	17.9	115	18.8	.94	7.5
Pacific	12.9	18.5	149	40	18.4	17.1	113	17.8	.91	7.6
United States	18.4	31.9	148	40	19.6	28.0	122	30.0	.90	7.1

1/ The "value mean" assessment ratio equals the total assessed value of transferred acreage and farm properties divided by their total selling prices. The "simple average" assessment ratio equals the sum of the assessment-to-sales-price ratios of individual transfers divided by the number of transferred properties; this, then, is the assessment ratio of the typical property within the group being measured. For each State, the "simple average" ratio $= \frac{1}{S} \sum S \left[\frac{1}{C} \sum (C\, z + \sum z_c) \right] / N$, where $\frac{1}{S}$ is the sampling rate within strata of counties, $\frac{1}{C}$ is the sampling rate within sample counties, $\sum z$ is the sum of the individual assessment ratios, $\sum z_c$ is the sum of individual assessment ratios of "certainty items" and N is $\sum S \left[\sum C \sum n + \sum n_c \right]$, n being the number of individual sample items and n_c those items taken with certainty.

2/ The index of assessment regressivity is calculated at the local jurisdictional level by dividing the simple average assessment ratio by the corresponding value mean assessment ratio. An index of 100 would indicate absence of any intrajurisdictional regressivity in assessment. The regional and U. S. average indexes are weighted averages (by selling prices) of the State indexes.

Assessment ratio data are based on a probability sample of 13,512 sales of vacant acreage and farms in 1,511 local assessing jurisdictions and in 159 additional counties sampled concurrently. Farm real estate tax levies per $100 of market value and as a percentage of net farm income are based on tax and value estimates by the Agricultural Research Service, Farm Economics Research Division, and income estimates by the Agricultural Marketing Service. As used here, "net farm income" equals total net income of farm operators from agriculture before real estate taxes, plus total net rent to nonfarm landlords. See text for definition and explanation of the statistical measures summarized in this table.

Table 3.- Analysis of assessment ratios of locally assessed real estate, United States, 1956

Class of real estate	Assessment ratios		Index of assessment regressivity within local assessing units
	Value mean	Simple average	
(1)	(2)	(3)	(4)
	Percent	Percent	
Census and supplementary sample: 1/			
Total vacant acreage and farms	18.4	31.9	148
Nonmetropolitan areas	20.0	33.4	131
Metropolitan areas	16.2	28.0	150
Farms	19.6	28.0	122
Nonmetropolitan areas	20.5	28.8	123
Metropolitan areas	17.3	24.1	121
Vacant acreage	16.7	34.8	159
Nonmetropolitan areas	18.5	37.9	154
Metropolitan areas	15.4	29.3	171
Census sample: 2/			
Vacant acreage and farms	20.5	3/	3/
Nonfarm residences	31.5	3/	3/
Single-family houses	3/	3/	3/
Single-family houses in selected local jurisdictions with populations above 50,000	28.3	28.8	4/ 109
Vacant lots	23.7	3/	3/
Commercial and industrial	3/	3/	3/
Other	3/	3/	3/
Total	30.0	3/	3/

1/ Based on a census sample in 1,511 local assessing jurisdictions and a supplementary sample taken concurrently in 159 additional counties. (See table 1.)

2/ Based solely on the original census sample in 1,511 local assessing jurisdictions. U. S. Bureau of the Census, 1957 Census of Governments, v. 5, Taxable Property Values in the United States, pp. 28-30, 81, and 130-141. The value mean assessment ratio for single-family houses in selected local jurisdictions (usually counties) with populations above 50,000 equals the sum of the "sales-based average assessment ratios" divided by the total number of selected jurisdictions. The corresponding simple average assessment ratio for single-family houses equals the sum of the "unweighted mean assessment ratios" divided by the total number of selected jurisdictions. (Note that the resulting averages are not perfectly comparable with the other averages summarized here; that is, all others are weighted averages.)

3/ Not estimated.

4/ Calculated for each selected jurisdiction by dividing the "unweighted mean assessment ratio" by the "sales-based average assessment ratio." The average index for the United States represents the sum of the individual indexes divided by the total number of selected counties. (Note that this is not a weighted average.)

related to assessments which typically are based largely upon values for agricultural purposes, it is not surprising that the assessment-to-sale ratio of such properties is lower in metropolitan than in nonmetropolitan areas.

As measured by the value mean assessment ratio (table 2, cols. 2, 6, and 9, and table 3, col. 2), it seems that transferred acreage and farm properties, either together or separately, were assessed at generally lower levels than were nonfarm residences, vacant lots, and the average of all locally assessed taxable real estate. However, the simple average assessment ratio of acreage and farm properties(31.9 percent for the United States) is considerably greater than the corresponding value mean assessment ratio (18.4). This relationship results from the above noted tendency of assessors to undervalue for tax purposes properties that have high total or per acre selling prices. Data on simple average assessment ratios are not available for vacant lots, commercial and industrial property, or all locally assessed taxable property. However, they were calculated for single-family nonfarm houses in selected local jurisdictions having 1950 populations of 50,000 or more in 1950 (in which the sample size was the most adequate). As indicated in table 3, the value mean assessment ratio of these single-family houses was 28.3 percent, their simple average assessment ratio was 28.8 percent, and the index of regressivity within assessing jurisdictions was only 109 percent. Thus the assessment ratio of the typical farm (28 percent) transferring in 1956, was quite close to that of the typical single-family house in the selected cities with populations above 50,000 (28.8 percent). 12/ The typical vacant-acreage property had an assessment ratio of 34.8 percent for the United States and 37.9 percent for nonmetropolitan areas.

Thus the quality of assessment of single-family residences in these large cities - as measured by the relative degree of assessment regressivity - is considerably better than that of assessment of "acreage" properties in most States. This is not surprising, in view of the relatively low turnover rate and the complexities involved in assessing acreage and farm properties compared with the assessment of single-family residences in major cities. However, it may have resulted partly from a higher degree of specialization and training of urban assessors compared with those in rural areas.

SUMMARY OF THE MAJOR CAUSES OF ASSESSMENT VARIATION

Differences in levels of assessment among individual properties, among classes of property (for instance, between farm realty and representative intangibles), among local assessment jurisdictions, and between locally assessed and State assessed properties arise from diverse causes - administrative, economic, political, and other. 13/

12/ But see footnote 2, table 3.

13/ Three comprehensive and still very pertinent treatises on the causes, effects, and possible cures of inequitable assessments are: Jensen, J. P., Property Taxation in the United States, 1931; Silverherz, J. D., The Assessment of Real Property in the United States, 1936; and the National Association of Assessing Officers (R. B. Welch, ed.), Assessment Organization and Personnel, 1941.

One fundamental cause of assessment variations is the retention of outmoded organizations for assessment in a majority of rural assessing jurisdictions. Too frequently, the farm assessor, who may be elected for a 1 or 2-year term only, receives little or no special training. Nor does he have such adequate "tools" as land use and classification maps, such systematic records of the major factors that determine farm value as classifications of soils by type, or information as to location of markets, highways, and the like. In order to meet statutory deadlines, he is allowed too little time (as little as 20 to 60 days) to permit the best possible assessment with the techniques and assessing aids that are available. The constant pressures from property owners for minimum assessments are only partly offset by counter demands for revenue with which to finance local governmental services.

The second basic reason for the wide assessment variations revealed by most analyses lies in the conceptual and technical difficulties involved in placing economic values on thousands of diverse individual properties. These problems, never minor, have become increasingly troublesome for assessors of rural properties as the rapid urbanization and industrialization of the Nation's economy continues.

As discussed above, assessors tend to underassess rural realty that has a high market value per acre and conversely to overassess properties with low values per acre. This is a result of inability to make adequate distinctions between the various grades of farmland.

The valuation of buildings and other farm improvements poses difficult problems. Cost of reproduction valuation adjusted for depreciation has been fairly successful for urban properties. But this technique is not always appropriate for farm improvements. Theoretically, the best approach would involve a marginal analysis of the incremental value that each improvement adds to the farm - or alternatively, the valuation of the entire farm as an economic entity. In many areas, however, and especially in those with nearby nonfarm industries and businesses, the primary value of a farm home may be as a residence for a part-time farmer who also has a nonfarm job. 14/ The value of such improvements as specialized dairy or poultry buildings may change drastically in regions where the returns from these operations are declining. In areas of low population density where small farms are being consolidated into larger operating units, for example, old improvements may be economic liabilities rather than assets.

A large part of assessment ratio differences between local assessing jurisdictions is associated with variations in the value of potentially taxable property, as related to local requirements for property tax revenues and the tax rate limitations that apply. Within each State, there are fairly wide local and regional differences in both aggregate and per capita wealth, as well as differing needs for property tax revenues to finance local governmental services. The following simplified illustration indicates what might happen in

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14/ In 1958, some 27.9 percent of the net income of the farm population came from nonagricultural sources. U. S. Agricultural Marketing Service, The Farm Income Situation, July 1959, p. 35.

two local governmental units with equal requirements for property tax revenues but different levels of aggregate market value of taxable property if assessment ratios were determined only by taxable wealth and levy rate limits - and on the hypothesis that public pressures for low assessments are effective in holding down total assessments to the minimum level upon which the required revenues can be levied:

	Local governmental unit	
	"A"	"B"
Property taxes to be levied (million dollars)------	1	1
Maximum statutory levy rate (mills/$1 assessment)--	50	50
Market value of taxable property (million dollars)-	100	200
Minimum assessed value required (million dollars)--	1/ 20	1/ 20
Resulting assessment ratio (percent)----------	20	10

1/ $1 million divided by 50 mills.

Analysis of assessment ratio and tax levy rate data assembled by the State Tax Commissions of Iowa and Kansas indicates a high degree of correlation between tax levies per dollar of market value of taxable real estate and the assessment ratio of this class of property. The coefficient of correlation between tax levies per $100 of market value of rural real estate and rural assessment ratios for 1955 in Iowa is high (0.86). 15/ A somewhat weaker correlation exists between urban taxes per dollar of market value and urban assessment ratios - a coefficient of 0.68. The same type of analysis applied to Kansas property tax levies per dollar of market value in 1956 indicates a high correlation for rural properties - (a coefficient of 0.93) but a rather low correlation for urban properties (a coefficient of 0.56). 16/ In part, the difference between urban and rural assessments seems to arise from the fact that in recent years, Kansas cities have obtained somewhat more rapid increases in maximum levy rate limitations than have rural local governments. Although the evidence is fragmentary, similar relationships apparently exist within many other States. Also, a regional comparison of the assessment ratios (value mean) of farm properties (table 2, col. 6) with farm realty levies per $100 of market value (table 2, col. 10), shows a definite correlation (a coefficient of 0.72) between major regions of the United States. In sum, there is a tendency, particularly intrastate for rural properties, but also interstate to a somewhat lesser degree, for assessment ratio levels to be positively related to the requirements for property tax revenue in relation to the potential tax base, as indicated by estimates of the market value of taxable property.

15/ Iowa State Tax Commission, Annual Report, 1956, and Robert E. Bucklew, Assessment Sales Analysis, Iowa State Tax Commission, Property Tax Division. County estimates of tax levies per $100 of market value were calculated by multiplying the net average millage levied on rural property by the corresponding assessment ratios.

16/ Kansas State Commission of Revenue and Taxation, Real Estate Assessment Ratio Study, 1956.

There is some evidence also that the uniformity of assessment within areas of relatively low assessment ratios tends to be less than in areas with higher levels of assessment. A regional analysis of the assessment ratios and indexes of regressivity for acreage and farm properties (table 2, cols. 2 and 4) indicates a negative correlation, a coefficient of -0.59. 17/

ECONOMIC AND FISCAL EFFECTS OF VARIATIONS IN FARM ASSESSMENTS

A study of the effects of variations in the assessment ratios of individual rural properties on township, county, and State property tax levies within a Kansas township in 1952 is summarized in table 4. 18/ It is clear from this illustration, and from the lack of assessment ratio uniformity indicated by the joint Census-ARS assessment ratio study (table 2) that serious tax inequalities exist between individual rural properties within assessing units. An earlier census study, based on a sample of 100 counties in 11 States had "the principal purpose . . . to confirm or disprove the theory that the ratio of real-estate taxes paid to the value of farm real estate declined progressively as the value of the farms increased." 19/ In most of the sample areas, the theory being tested was found to be essentially valid. Even more consistently, however, it was found that taxes per $100 of market value declined as value per acre increased. The findings shown in table 5 for five Montana counties are fairly typical. 20/ Obviously the owners of low-value farms had grounds for complaint against a distribution of the real estate tax-load that compounded their economic disadvantage in relation to the owners of more productive land.

The combined effects of assessment variations and the decline in relationship between farm property ownership and net incomes of farmers were delineated by a study of 165 members of the Southeast Minnesota Farm Management Service in 1954: 21/

17/ The t-test of the significance of this correlation (t equals 2.08) shows it is significant at the 0.1 probability level.

18/ Leonard, L. A., op. cit., p. 51. It is assumed here that selling prices are accurate measures of economic value. The township was fairly typical in regard to assessment variations. "Levies under a uniform assessment" were calculated by multiplying the sales prices of the individual properties by the rate required to produce a total of $922, the aggregate amount that was actually levied on the properties. The difference between gains and losses is due to rounding. The properties were not all in the same school district; therefore, school tax levies were excluded.

19/ Jenkins, W. B., Census of Agriculture, 1930, Taxes on Farm Property in the United States, 1933, p. 1.

20/ Jenkins, W. B., ibid., p. 56.

21/ Baumgartner, H. W., and Raup, P. M., Property Taxes and the Minnesota Farmer, Minnesota Farm Business Notes, February 1959, p. 1. Taxes included levies on farm personal property as well as real estate.

Net income class	Farm property tax	Property tax as percentage of net income
	Dollars	Percent
Less than $2,000----	560	41.9
$2,000 to $3,999----	539	15.2
$4,000 to $5,999----	634	11.3
$6,000 to $7,999----	684	9.1
$8,000 to $9,999----	718	7.8
$10,000 to $11,999--	703	6.1
$12,000 and over----	1,158	6.8

Table 4.- Impact of tax levies on 15 individual rural properties, a Kansas township, 1952

Individual assessment ratios	Tax levies		Tax gain or loss	Actual levy as percentage of levy under uniform assessment
	Actual	Under uniform assessment		
Percent	Dollars	Dollars	Dollars	Percent
6	2	10	8	20
7	32	128	95	25
7	33	128	95	26
9	47	141	94	33
16	23	41	18	56
16	10	19	9	53
18	15	24	9	63
25	9	10	1	90
32	68	58	-10	117
34	111	93	-18	119
36	53	41	-12	129
46	114	70	-44	163
63	125	56	-69	223
70	125	50	-75	250
82	155	53	-102	292
---	922	922	---	---

Table 5.- Comparisons of taxes per $100 of value and average market value, by market-value-per-acre class, five Montana counties, 1930

Market value per acre	Real estate taxes per $100 of value of land and buildings	Percentage of total value of land and buildings	Percentage of total real estate taxes	Average market value per farm
	Dollars	Percent	Percent	1,000 dollars
Under $8	2.55	8.9	14.8	3.2
$8 to $12	1.88	17.5	20.7	5.7
$13 to $17	1.55	19.2	19.5	7.1
$18 to $22	1.39	24.3	22.1	9.2
$23 to $27	1.36	12.4	11.0	10.3
$28 to $32	1.25	7.7	6.3	10.3
$33 to $37	.86	3.8	2.1	18.1
$38 to $42	1.09	1.8	1.2	10.5
$43 to $47	1.00	1.0	.7	12.4
$48 to $52	1.04	.7	.5	10.7
$53 and over	.59	2.8	1.1	13.7
Total or average	1.53	100.0	100.0	7.3

In addition to the effects of differences of assessment between individual properties within the same local tax-levying governmental unit, obvious tax inequalities result from differing levels of assessment between various classes of property - farm real estate, farm personal property, nonfarm residences, and realty and personal properties owned by nonfarm businesses and industries, as well as representative and nonrepresentative intangibles. With property tax revenues from all classes of property in the United States totaling $14,047 million in 1958 including some $1,103 million levied on farm real estate and $240 million from farm personal property levies, it is clear that the economic and fiscal effects of assessment nonuniformity are not minor. 22/

22/ In 1957, $12,851 million was collected as follows: State, 3.7 percent; counties 20.4 percent; municipalities 33.5 percent; townships 5.6 percent; school districts, 34.5 percent; and special districts 2.3 percent. The 1958 census estimate of property taxes levied by particular types of local governments other than school districts is based on a sub-sample; the detail by type of government does not add precisely to the aggregate estimate for local governments. See U. S. Bureau of the Census, Government Finances in 1958, p. 21. Farm tax estimates are from Taxes Levied on Farm Real Estate in 1958, U. S. Agr. Res. Serv. ARS 43-106, p. 8, and The Agricultural Finance Outlook U. S. Agr. Res. Serv. ARS 43-100, p. 12.

Although the 1957 Census of Governments and other studies have provided estimates of the assessment-to-sale relationship of transferred properties which properly qualified are useful as indicators of the uniformity of assessment within assessing jurisdictions, these data are not always representative of the "universe" of all properties on the tax rolls. This is illustrated in table 6, as is the relative importance of the assessed valuation of various property classes vis-a-vis total locally assessed real estate.

Table 6.- Transferred properties compared with all locally assessed real estate, United States, 1956

Property classes	Transferred properties as percentage of all properties		Percentage distribution of all locally assessed real estate 1/	
	Number	Assessed value	Number	Assessed value
	Percent	Percent	Percent	Percent
Residential (nonfarm)	1/ 2.26	1/ 2.21	50.6	54.1
Single-family houses only	2/ 2.1	2/ 2.1	49.0	45.4
Vacant acreage and farms	1/ 1.03	1/ .77	23.2	13.9
Vacant lots	1/ 2.39	1/ 3.51	20.8	2.3
Commercial and industrial	1/ 1.57	1/ 1.21	3.7	27.7
Commercial	2/ 1.6	2/ 1.3	3.2	16.6
Industrial	2/ 2.0	2/ .5	.5	10.8
Other and unallocable	3/	3/	1.7	2.1
Total	3/	3/	100.0	100.0

1/ U. S. Bureau of the Census, 1957 Census of Governments, v. 5, Taxable Property Values in the United States, 1959, pp. 6, 29-31.
2/ U. S. Bureau of the Census, Assessed Values and Sales Prices of Transferred Real Properties, 1957 Census of Governments Advance Release 7, 1958, pp. 21-25.
3/ Not available.

It is clear from these data (table 6) that transferred acreage and farms, as well as transferred commercial and industrial properties, have averaged considerably lower in value than have the corresponding classes of properties on the assessment rolls. But the vacant lots that have been selling are typically of higher value than are all vacant lots on the assessment rolls. Residential properties that are sold, however, appear to be representative, as measured by assessed value, of all such properties on the rolls.

There are further major differences between the values of farms according to the U. S. Department of Agriculture definition and those of vacant acreages

and farms included in the 1957 Census of Government sample of transferred properties. Obviously, these and other statistical and conceptional difficulties limit the conclusions in regard to assessment ratios of major classes of real estate and also conclusions concerning the distribution of property taxes that can validly be drawn from studies of transferred property. It is to be hoped that future analyses will shed more light on this important area.

POSSIBILITIES FOR FUTURE ASSESSMENT AND TAX IMPROVEMENTS

Since early in the 19th century and even earlier, State legislative bodies have attempted to minimize the effects of nonuniform assessments. They have done this indirectly by gradually reducing the importance of the property tax as a component of total State revenues, from 42.7 percent in 1902 to 1.9 percent in 1957. 23/ The relative importance of the property tax also declined for local governments - from 68.3 percent in 1902 to a still important 42.8 percent of total revenue from all sources in 1957. Second, many States attempted to improve the quality of local assessment by programs of supervision and technical assistance and also by equalizing the average assessment ratios of local governments.

State tax commissions and other governmental bodies have probably been more active in recent decades, and particularly since World War II, in their attempts to equalize the average assessment ratios between local governmental units than in any other type of assessment supervision or equalization activity. California, Illinois, Kentucky, Pennsylvania, Wisconsin, and a dozen or more additional States have been particularly active in this endeavor. Perhaps the major purpose of these inter-jurisdictional equalizations in recent years - with the general decline of property taxes as an important State revenue source - has been to distribute more equitably various State grants-in-aid and State-collected, locally shared revenues based either directly or indirectly on property assessments. In addition, some States have attempted to reduce the advantages of low assessments to local governments by distributing grants or shared taxes in proportion to local assessments. In Kansas, for example, State distributions from the sales tax residue fund, the county and township road fund, and the liquor enforcement fund have been based partly on taxable tangible valuations of the local governments. State assessing organizations whose original primary function was the assessing of railroads, utilities, and in some instances, other intercounty properties, have been increasingly active in supervising and assisting local assessing officials.

The National Association of Assessing Officers has done pioneering work in devising more systematic assessment techniques, organizing training programs, and generally improving the professional standards of assessors. Also, cooperation between State and local assessing officials and college and university economists, agronomists, engineers, and other specialists is

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23/ U. S. Bureau of the Census, Governmental Finances in the United States, 1902 to 1957, 1957 Census of Governments Advance Release 9, p. 23, and State and Local Government Finance in 1957, Advance Release 8, 1959, p. 13.

increasing. The latter have participated in training programs for assessors and have contributed extensively to the theory and literature bearing on assessment problems. 24/

These efforts to improve the techniques of assessment, together with the increasingly skillful use of techniques for equalizing the average assessment ratios between local governmental units by State tax agencies, have been encouraging and should be continued, improved, and expanded. But in view of the increasing complexity of the assessment process in our dynamic economy, substantial additional efforts toward improving assessment organizations at the local level are needed. 25/ State laws need modernization to provide more realistic and operational definitions of market values by property classes. Efforts of the National Association of Assessing Officers to improve the professional capabilities of assessors merit a corresponding willingness of State and local governments to provide the financial support and employment security necessary to attract the most qualified personnel available. State legislative bodies would find it worthwhile to consider the advantages of increasing the number of engineers, mapping technicians, and other specialists to expand programs of training for and assistance to local assessing officials. Most of these recommendations are not new; they have been advocated by students of assessment administration for many decades. Without increasing acceptance of these fundamental administrative improvements, it is doubtful whether substantial additional improvements in methods of assessment can be made locally. With acceptance of more advanced assessment organizations and techniques, the bright spots in the assessing picture should steadily increase.

24/ Agricultural economists and agronomists have been active in developing techniques of assessing farm real estate. For example, Kellogg, C. E., and Ableiter, J. K., A Method of Rural Land Classification; U. S. Dept. Agr. Tech. Bul. 469, 29 pp., 1935; Walker, W. P., Improving Farm Property Assessments, Md. Univ. Bul. A36, 26 pp., 1945; Simmons, Will, Assessment Procedures in Rural New York, Cornell Ext. Bul. 760, 75 pp., 1949; Murray, W. G., Farm Appraisals, Ed. 3, 336 pp., 1954, Iowa State College Press; Aandahl, A. R., Murray, W. G., and Scholtes, Wayne, Economic Rating of Soils for Tax Assessment, Jour. Farm Econ., 36 (3) 483-499, 1954; Murray, W. G., Improving Property Assessments in the Midwest, North Central Land Tenure Committee, 48 pp., 1954; and Taylor, C. C. and Aull, G. H., A Practical Approach to Improving Farm Real Estate Assessment in South Carolina, S. C. Expt. Sta. Bul. 450, 45 pp., illus., 1957.

25/ See the author's Property Taxation in Kansas, An Historical Analysis, Natl. Tax Jour. 11 (3) : 230-240, 1958, for more detailed suggestions for improving property tax law and administration.